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ABSTRACT

A comprehensive interdisciplinary program for educating library automation specialists has been developed at Louisiana State University. It consists of three programs: (1) a Master of Library and Information Science/Master of Science in Systems Science program; (2) a Certificate in Library Automation; and (3) a Ph.D. in Computer Science, for which an information science minor is administered by the School of Library and Information Science for the Department of Computer Science. Four students who had completed a Certificate in Library and Information Science, which grew out of the Certificate in Library Automation program, were interviewed upon completion of the program and again in December 1988. The students were generally supportive of the program and its positive effect upon their careers. Although they found the program to be deficient in the area of hands-on experience with automated systems, they commented that it was difficult to learn everything desired in the short amount of time available. An evaluation of the joint master's degree program showed two problems--the lack of student background when entering the systems degree portion of the program, and a lack of desire to finish both degrees when the student becomes very marketable as an information professional with only the one degree completed. The programs continue to be evaluated and revised, although it is expected that in time, with the growth of library automation, it will not be necessary to engage in such heavy recruitment to enroll students in the programs. (EW)

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SCHOOL OF LIBRARY AND INFORMATION SCIENCE

LOUISIANA STATE UNIVERSITY

A Multidisciplinary Education Curriculum for the Design, Installation and Maintenance of Automated Library Systems

Council on Library Resources Implementation Grant CLR 3023/802

FINAL REPORT

Danny P. Wallace

December, 1988

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This report describes work on Phases III and IV of a project funded by the Council on Library Resources. Phases I and II were supported by an earlier CLR Planning Grant (CLR 3012-B).

NARRATIVE REPORT

I. *Overview of the project*

Libraries and related information centers are inherently technology dependent. The technologies that are currently making the greatest impact are those related to computers and automation. In August, 1984, members of the faculty of the Louisiana State University School of Library and Information Science, recognizing that education in the use of new technologies had become a critical problem for librarianship and the information professions, submitted a proposal to the Council on Library for a Planning Grant to explore

the recruitment of students with computer science backgrounds. The proposal was funded in October, 1984 (CLR # 3012-B), and work began immediately. The work accomplished during the Planning Grant period was incorporated into a four-phase approach to developing a comprehensive educational program to meet the diverse educational needs of students in an increasingly technological environment.

- Phase I of the project involved the development, with the LSU Department of Computer Science, of a joint master's degree program. This program allows a student to study simultaneously for the Master of Library and Information Science and the Master of Science in Systems Science. The joint program as finally approved by the LSU Graduate Council requires a total of sixty-one semester hours for completion, as opposed to the seventy-three hours that would be required if the two degrees were pursued totally independently. The joint program now has three graduates. Three students are currently enrolled, and at least one new student has expressed intent to enroll during 1989. Two students completed the M.L.I.S. degree and most of the requirements for the M.S. in Sy.Sc., but accepted employment without completing the second degree.

- Phase II of the project, which was funded by the CLR Planning Grant, focused on recruitment of students for the joint degree program. A brochure describing the joint program was developed and distributed, a workshop attended by chairs of computer science departments from the region was held, and faculty members traveled to several campuses to visit with computer science faculty and students.

The work completed during Phases I and II led directly to a proposal for an Implementation Grant to support further development of the School's program for educating library automation specialists. The proposal was accepted in November, 1985, and work on the third and fourth phases of the project began in January, 1986. This report is the final report for work conducted under the Implementation Grant.

Phase III of the project concentrated on the development of specific curricula to meet the diverse needs of the students entering the program. Curriculum development for interdisciplinary programs designed to enhance the

technical and systems skills of library and information science students was considered essential to the success of the project. Four major interdisciplinary programs are involved:

- the Master of Library and Information Science degree program, which is not directly dealt with by the grant;
- the joint Master of Library and Information Science/Master of Science in Systems Science program;
- the Certificate in Library Automation, which was initially formulated as an experimental non-degree post-master's program administered by the School of Library and Information Science with significant input from the Department of Computer Science; and
- the Ph.D. in Computer Science, for which an information science minor is administered by the School of Library and Information Science for the Department of Computer Science.

Work on Phase III of the project was conducted during the summer of 1986 by Professors Wallace and Boyce of the School of Library and Information Science and Professor Kraft, Chair of the Department of Computer Science, with input from students in the various programs. This work resulted in concise statements of the requirements and options for the joint master's degree program, the Certificate in Library Automation and the Ph.D. minor. Refinement and development of these curricula is an ongoing activity. Specific objectives for Phase III included:

- Development of a firm curriculum for the Joint Degree Program.
- Development of Systems Science curricula tailored to M.L.I.S. degree holders requiring additional preparation in computing and other technical and quantitative areas.
- Development of a Systems Science Certificate mechanism for M.L.I.S. students who wish to gain technical and quantitative skills without earning another master's degree.
- Development of a Library and Information Science minor for doctoral students in Computer Science.

All four objectives have been met, although not in precisely the manner that was proposed. A description of a model joint program curriculum has been developed for use by advisers, and the major advisory role for joint program students has been assigned to faculty of the School of Library and Information Science. The idea of "bridge seminars" for M.L.I.S. students in need of intensive preparation for the M.S. in Sy.Sc. was rejected as unfeasible; students are instead advised regarding the selection of additional computer science courses that fill the same need. The "Systems Science Certificate" has become a formal degree, the Certificate in Library and Information Science, with an option for a Specialization in Library Automation. A statement of information science minor requirements and options for Computer Science Ph.D. students has been developed, and to date four students have incorporated the information science minor into their doctoral programs. The Ph.D. program generally requires at least three years for completion, and one Ph.D. in computer science with a minor in information science has been awarded during the project period.

Phase IV of the project involved recruitment of students for the various interdisciplinary programs. The objectives for Phase IV were:

- Expand the pool of new applicants in either Systems Science or Library and Information Science.
- Attract students in that pool to the Joint Degree Program.
- Publicize to current M.L.I.S. holders the fact that "bridge seminars" exist to give them the technical and quantitative background needed to enter the Systems Science program.
- Recruit practitioners in librarianship to the post-M.L.I.S. certificate program.
- Demonstrate the capability of the Joint Degree Program to produce library and information scientists with high technical expertise through all of the various program tracks.

The pool of new applicants for the joint degree program has remained fairly steady, with two new enrollments for each year the program has been in existence. Given the highly specialized nature of the program, this is considered an acceptable level of performance. Efforts to attract more students are in progress, focusing on the development of a new recruitment brochure describing the complete range of the School's offerings related to library automation. The third objective for Phase IV was abandoned after the "bridge seminar" notion was determined to be unfeasible. Achievement of the fourth objective has been particularly encouraging, as four students have graduated from the Certificate in Library and Information Science program with a Specialization in Library Automation, and two are currently enrolled. Although the first three graduates were influenced by and benefited from substantial financial support funded by the grant, the fourth graduate received only minimal grant support, and the two current C.L.I.S. students enrolled with no promise of financial support. The fifth objective requires longer term evaluation than can be provided at this time, but the placement and activities of graduates of the various programs can be taken as an indicator of its short-term achievement.

II. *Evaluation of the project*

The general opinion of those individuals who have been most involved in the planning and implementation of the project is that it has been a great success. Although enrollment in the various programs is not especially high, it appears to be successful in light of the very specialized nature of the programs and the diversity of needs for library automation expertise.

Further support for a positive evaluation of the project is reflected in the official actions of the university regarding the joint program and the post-master's certificate. The LSU Graduate Council overwhelmingly supported

the joint M.L.I.S/M.S. in Sy.Sc. program by granting an exemption from its usual requirements regarding overlapping degree programs. The Council has made it very clear that the exemption was based on the quality of the design of the joint program and on their appraisal of the statement of need for such a cooperative effort presented by the School of Library and Information Science and the Department of Computer Science.

The Certificate in Library Automation program, which was originally formulated as a non-degree post-master's experience, made it possible for the School of Library and Information Science to gain permission to offer an official Certificate in Library and Information Science degree. This came at a time of financial retrenchment during which several of the university's graduate programs were eliminated and a "freeze" on new graduate programs was officially in effect. Again, the careful delineation of the need for and nature of the program, coupled with the support from the Council on Library Resources, played an essential part in gaining permission to offer the degree.

Student evaluation of the Certificate in Library and Information Science

The four individuals who have now graduated from the C.L.I.S. program were interviewed at the time they completed the degree, and again in December, 1988. The purpose of the interviews was to gather evaluative information from the graduates regarding their perceptions of the successes and failures of the program. The questions asked at the time of graduation included:

1. What were your personal and professional objectives for the program?
2. In what ways have your objectives been met?
3. In what ways have your objectives not been met?
4. What have you gained that will help you in your career?
5. Has the program been detrimental to your career in any way?
6. What do you feel are the strengths of the program?
7. What do you feel are the weaknesses of the program?
8. Would you have entered the program with only the assistantship support and not the CLR-funded fellowship?

9. Was the assistantship work relevant to your educational needs?
10. Was the assistantship work a positive experience?
11. Did you feel at a disadvantage relative to other students in any of the courses?
12. In what ways could LSU and the School of Library and Information Science have been more helpful to you in the program?
13. What specific changes would you recommend?

The objectives of the four graduates centered around professional growth, development of new skills, and gaining credentials for professional advancement. Failure to meet those objectives lay in the area of hands-on experience with automated systems: the consensus was that general considerations and management of automated systems were covered adequately, but that more direct, practical experience would have been useful.

The only explicitly detrimental factors mentioned had to do with personal factors relating to problems common to students who enter graduate programs in mid-career. Two students mentioned problems relating to family life and loss of status in the transition from professional to student. None suggested that the program itself had detrimental attributes. Specific strengths included the "focus on relevant topics;" the timeliness of the program; the flexible, multidisciplinary nature of the program; and the ability to explore new areas such as management information systems and statistics. The commonly mentioned weaknesses had to do with the newness of the program, which produced some problems with course scheduling and graduate assistantships.

The three students who enrolled full-time were unanimous in their statements that they could not have entered the program without financial assistance. The assistantships provided to the students were felt to be beneficial

overall, but better communication between the School of Library and Information Science and the library was needed. All three felt that their prior experiences could have been given more adequate consideration.

Although all of the students felt that they had to work very hard in the courses they took in management information systems, computer science, and statistics, they tempered their remarks with emphasis on the usefulness of the courses.

There was no consistent expression of ways in which the School could have been more helpful or of suggestions for improvement. One student felt that the program could have been more been more closely tailored to individual student needs. Another suggested the addition of a second management information systems course. All indicated that, given the opportunity to re-make the decision to enroll, they would decide to do so.

The questions asked in December, 1988, included:

1. What were your personal and professional objectives for the C.L.I.S. program?
2. In what ways were your objectives met?
3. In what ways were your objectives not met?
4. Are there any things the program should have prepared you to do, for which you weren't prepared?
5. What do you feel were the strengths of the program?
6. What do you feel were the weaknesses of the program?
7. What elements of the program do you think should be changed?
8. Would you recommend the C.L.I.S. program to other librarians who want to enhance their understanding of automation?
9. Briefly describe your current job. In what ways do you use what you learned in the C.L.I.S. program in your job?

The passage of time had not changed the graduates' perceptions of their objectives in any substantial manner. The two students who remained in the jobs they had before enrolling had both achieved promotions, and both felt that completion of the degree was an important factor in their being promoted.

A third student entered a new job immediately on graduation, while the fourth was unemployed for several weeks. The failure of this individual to gain immediate employment was apparently the result of a job search that was very restricted geographically.

Responses to the fourth question reiterated the graduates' desire for more hands-on experience. There was some uniformity of agreement that more experience with microcomputer hardware and software would have been appropriate. Evaluation of the comments strengths and weaknesses suggests that the courses offered were beneficial, but that it is impossible to fit all that a student would really like to know into a one-year program. The new, experimental nature of the program was also mentioned.

Specific changes suggested concentrated on the availability of courses specifically related to library automation. One student suggested that courses might be developed for C.L.I.S. students only. Again, emphasis was given to the inability to learn everything desired in the amount of time available.

Respondents were unanimous in their continued support for the program. The most frequent response to the eighth question was that the graduates not only would recommend the program to others, but had done so. One graduate emphasized the need for professionals "to take time out of their life to do this right."

Responses to the ninth question emphasized the continual usefulness of things that had been learned in the C.L.I.S. program. As one graduate said, "I use all of it every day. Without the C.L.I.S. I would not have the job."

Profiles of graduates:

Joint M.L.I.S./M.S. in Sy.Sc.:

Philip Arny is Systems Coordinator for the Bio-Medical Library of the University of Minnesota--Twin Cities. He is responsible for managing the library's computer resources and the Learning Resources Center. His duties include recommending purchases of computer software and hardware, maintaining and computer systems, providing instruction in the use of computers, and providing consulting services for faculty and students.

Sridhar Radhakrishnan, the first graduate of the joint degree program, is a Ph.D. candidate in the Louisiana State University Department of Computer Science, minoring in information science.

Cynthia Sherman is a programmer for Data Research Associates, an automated library systems vendor in St. Louis, Missouri. She is currently engaged in developing new features for DRA's automated serials control system. She feels that the unique nature of her educational background contributed strongly to her being employed by DRA.

Gerry Burguera, the first student to enroll in the joint program, completed the M.L.I.S. and most of the requirements for the M.S. in Sy.Sc. before accepting an internship at the Library of Congress. He is a Management Analyst for the Processing Services Division of the Library of Congress. His responsibilities include creating and processing administrative statistics for the Division. He also performs statistical forecasting and maintains personnel databases, all involving extensive use of computer systems.

John Rabalais also completed the M.L.I.S. and most of the M.S. in Sy.Sc. before accepting a position as Information Program Specialist for Texaco, Inc., where he is involved in support and trouble-shooting operations for the corporation's TELON code generation system.

C.L.I.S.:

Paul Bick is Extension Services Consultant for the Houston Public library. His duties include coordination of microcomputer services for the central library facility and its branches.

Marianne Puckett is Associate Director of the Medical Center Library and Associate Professor of Medical Library Science at Louisiana State University-Shreveport. She is currently working as Automation Consultant and Systems Project Director for the Medical Center Library, and is responsible for the administration, implementation and operation of the NOTIS integrated library system.

Sara Taffae, a graduate of the C.L.I.S. program, is Library Automation Consultant for the Louisiana State Library. She is responsible for installation and administration of the Louisiana State Library's Lasernet op-

tical disk interlibrary loan system, and trains librarians in the use of the Lasernet system. She also acts as general hardware and software consultant for public libraries in the state.

Donald Welch is employed as an Information Specialist at Bell Helicopter Textron of Fort Worth, Texas.

Ph.D. in Computer Science, minor in Information Science:

Krysztof Kochut is an Assistant Professor of Computer Science at the University of Georgia, where he is conducting research related to artificial intelligence.

III. *Project summary*

Although the programs supported by the Implementation Grant cannot be viewed as perfect and trouble-free, the problems remaining are those of any educational program. No degree program can be all things to all people, but the diversity of opportunities currently offered at LSU does not appear to be equaled elsewhere.

The joint master's degree program has two ongoing problems that are of some concern to the faculties of the School of Library and Information Science and the Department of Computer Science. The first is that many students entering the program are deficient in terms of preparation for the M.S. in Sy.Sc. The need to remove such deficiencies may add as much as a semester to the time required for completion of the two master's degrees. For some students this may create the perception that the joint program requires an unacceptable amount of time for completion.

The second problem is closely related to the first: a student who has completed the M.L.I.S. and the course work portion of the M.S. in Sy.Sc. is very marketable as an information professional without completing the second degree, and may feel limited motivation to complete the degree. Simply put, the knowledge and skills gained through study toward the M.S. in Sy.Sc. are of

more value to prospective employers than is the degree itself, and students may be wooed away from completion of the second degree by the prospect of ready employment in responsible or lucrative positions. Two joint master's program students have left the university without completing the M.S. in Sy.Sc. degree, and it seems reasonable to anticipate that this may situation may be repeated in the future. This problem is actually an indicator of the appropriateness of the goals of the program, and no action to correct it is anticipated.

The programs supported by the Implementation Grant have been described in four journal articles[1] and two conference presentations.[2] Reaction from the library and information science education community has been very good, and inquiries from prospective students are at an acceptable level, although an increase is sought. Informal comments from colleagues at other institu-

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1. Danny P. Wallace and Kathleen M. Heim, "Creativity in Library and Information Science Education: Implications for Curriculum Design," *Journal of Library Administration* 10 (May 1989) (in press).

   Bert R. Boyce and Kathleen M. Heim, "The Education of Library Systems Analysts for the Nineties," *Journal of Library Administration* 9 (1988): 69 - 76.

   Danny P. Wallace and Bert R. Boyce, "Computer Technology and Interdisciplinary Efforts in Library and Information Science Education: A Discussion and Model Program", *Journal of Education for Library and Information Science* 27 (Winter 1987): 158-168.

   Bert R. Boyce and Danny P. Wallace, "A Model Program for Library Automation Education", *LLA Bulletin* (Louisiana Library Association) 49 (Fall 1986): 109-110.

2. Danny P. Wallace and Bert R. Boyce, "Education for Library Automation: An Interdisciplinary Approach," Texas Library Association, San Antonio, April 1987.

   Danny P. Wallace, Bert R. Boyce, Donald H. Kraft and Norman Howden, "A Multilevel Approach to Education for Library Automation," Association for Library and Information Science Education, Chicago, January 1987.

tions and inquiries from other schools of library and information science suggest that the diverse programs offered at LSU truly are acting as a model. The development and dissemination of a new brochure targeting students interested in library automation careers are being pursued as a means of increasing inquiries and enrollment.

The benefits of the program for Louisiana State University have been substantial. The School of Library and Information Science has clearly gained increased status and visibility as a result of the activities funded by the grant. The addition of the C.L.I.S. to the School's degree offerings makes it possible to provide meaningful post-master's education not only in library automation but in other areas as well. The perceived success of the C.L.I.S. and joint master's degree programs will also act as support should the School choose to seek university support for a doctoral program.

The cooperation between the School of Library and Information Science and the Department of Computer Science have definitely gained the favorable attention of the university's administration, and have led to increased efforts to develop similar cooperative efforts involving the School of Library and Information Science and other academic units. The visibility accompanying these cooperative efforts has also resulted in a small but noticeable increase in the number of students from other academic units enrolling in library and information science courses.

Benefits to the students seem almost self-evident, given the universal success graduates of the programs have had in gaining employment in responsible positions. The jobs obtained by graduates of the joint master's and C.L.I.S. program are different from those obtained by most other graduates not only in terms of their involvement with automation, but also in terms of the

level of responsibility and authority. The graduates of the C.L.I.S. program were for the most part at mid-career, and the major benefit to them appears to have been substantial promotion in their current positions or the ability to move to new positions of increased responsibility. It is interesting that the positions accepted by most graduates of the joint master's program are actually very similar to those occupied by C.L.I.S. graduates. The joint program clearly prepares graduates for positions that are substantially beyond the usual "entry level" position accepted by the typical M.L.I.S. graduate.

Benefits to the profession and to the clienteles served by graduates are much more difficult to assess. The self-assessment of graduates indicates that their educational experiences have certainly led them to feel more qualified to deal with technological problems. The types and levels of jobs they have taken indicate that employers share that feeling.

IV. *Plans for future action*

The project funded by this grant is in many ways just beginning. The programs have been designed, are fully functional, and are considered highly successful. The grant has effectively facilitated the process of developing and testing LSU's integrated multidisciplinary approach to educating library automation specialists. Continuation, revision and enhancement of the programs are the ongoing responsibility of the School of Library and Information Science and Department of Computer Science. In the future, other academic units that may be brought into active partnership as well. The activities supported by the grant have made it possible to reach a stage at which ongoing developmental activities can be handled in the same manner as the continuous curriculum revision that is essential to any forward-looking academic endeavor.

As demand for automation specialists increases and prospective students become more aware of automation as an area of specialization, recruitment of students to LSU's programs may become a relatively passive task. For the time being, recruitment must be handled in a very active manner. To that end, the School of Library and Information Science is preparing a brochure describing its offerings in the M.L.I.S., joint M.L.I.S./M.S in Sy.Sc. and C.L.I.S. programs. This brochure will describe the need for library automation specialists, discuss the rationale and nature of the three programs, and profile graduates. Although plans for the distribution of the brochure have not been finalized, it is anticipated that the brochure will be used aggressively in recruiting new students to the programs. Probable courses of action include mailings to departments of computer science and distribution at professional conferences, particularly those that focus on library automation.

Submitted January 12, 1989

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